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SOVIET ASSISTANCE TO IRON AND STEEL INDUSTRY OF NORTH KOREA

Soviet technological assistance in the restoration of the iron and steel industry of North Korea, which was destroyed by the Japanese, is described in the following article. In restoring the Hwanghae Ironworks, the Soviet technicians succeeded in utilizing native coal and Sakhalin coals to manufacture coke and steel, thus obviating the necessity of using Manchurian or Japanese coal as was required under the Japanese management. Some coke ovens and blast furnaces were restored by 1947. Besides technological aid, the Soviet engineers taught the Koreans better manpower organization and plant management. By the end of 1948, the Koreans operated and managed the ironworks more efficiently than the Japanese.

Soviet assistance was also extended to the manufacturing of copper pipes, wire, and silicon steel plates at the Songjin Steel Plant. A metallurgical institute was established in P'yongyang by Professor Savel'yev, a renowned metallurgical specialist, who believed that there is a good potentiality for the development of metallurgical industry in North Korea, because North Korea produces manganese, chrome, vanadium, nickel, wolfram, and has an ample supply of electric power. Further notable Soviet assistance included restoration of the Kangson Steel Plant and Haeju Machine Manufacturing Plant.

The Japanese imperialists partially or completely destroyed many Korean mines, power stations, factories, plants, etc., at the time of their defeat. Of these, the hardest hit was the iron and steel industry. The Hwanghae Ironworks and other iron and steel plants were equipped with superheating systems, and the destruction of these was easily accomplished. By the end of the war, destruction and confusion had practically forced this industry to a complete halt. The supply of raw materials and other materials needed in steel plants

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and iron foundries had come from foreign nations, such as Manchuria, China, and Japan. Consequently, the restoration and operation of these industries was almost hopeless. However, the most important factor lacking in Korea was the necessary technical skill.

To maintain their monopoly over heavy industry, the Japanese had prevented the Koreans from learning technical skills. In such plants as the Kyomip'o Ironworks (now the Hwanghae Ironworks), the Japanese did not use Koreans even for odd jobs. In the Kojup'a Plant in Songjin (now the Songjin Steel Plant), there was not a single Korean technician, and technical matters in that plant were kept completely secret.

In March 1946, Engineer Rachinik began the complete restoration of the damaged furnaces, pipe systems, and electrical wiring, as a step toward reconstruction of the steel-making installations in the Hwanghae Ironworks. At the same time, he succeeded in using a mixture of domestically produced coal in the gas-producing furnace, where only Fushun coal from Manchuria or the best Japanese coals could be used during the Japanese occupation, to manufacture open-hearth steel.

At about the same time that Rachinik arrived, Engineer Karachilov came to the Hwanghae Ironworks. He organized patriotic workers into groups to restore the blast furnaces and coke ovens and guided them in the restoration. He is a very able coke engineer with many years of experience.

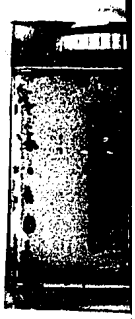
During the Japanese occupation, production of coke at the Hwanghae Ironworks was possible only with Japanese Kyushu coal, Manchurian Coal from Pen-ch'i-hu, North China coal from K'ai-luan and Ta-t'ung. But through constant research extending over a year, Engineer Karachilov finally succeeded in using only Sakhalin coal, which is now available for the production of high-grade coke which can be used in the large blast furnace. Consequently, in July 1947, the No 2 coke oven was reopened under his direction, and for the first time the production of coke with Sakhalin coal became possible.

However, Karachilov was not satisfied with only this success. He found a new method of mixing Mil San coal from P'yongan Pukto with Tonghwa coal /from Kangwon Do?/, both of which are well located for convenient transportation, and in April 1948, he obtained excellent results in testing it in the No 1 oven. With these successes, the most immediate difficulty, the mixing problem, in Korean coke production has been solved.

Karachilov gave capable and efficient direction in the operation of a steel plant, on the basis of his many years' actual experience as plant manager of the Magnitogorsk Coke Plant. He explained methods of mechanization; for example, the use of the gantry crane for moving coal which saved a great deal of energy, expense, and time, thereby reducing the manufacturing cost and tremendously increasing efficiency.

Engineer Karachilov used his past experience in manpower organization and in plant management to instill the correct attitude in the technicians toward their work and to teach workers how to use their technical skills.

The meetings between the enthusiastic teacher, Karachilov, and the eager students, our workers, continued for 2½ years until July 1948, when he returned to his fatherland. As a result of these efforts, the Korean engineers in the Hwanghae Ironworks, were able to initiate the production of iron from the No 3 blast furnace on 3 December 1947. Today, the Koreans



operate and manage the Hwanghae Ironworks several times more efficiently than the Japanese. The Soviet engineers trained and organized several hundred capable technicians and managerial personnel who are daily adding to the development of Korean industry. Among those who received training, Han Kyong-han, the chief of the coke section; Yom Chong, the chief of the pig-iron section; and Engineer Han Ki-ch'ang, are the best of the young engineers.

Engineer Il'in also helped to develop the Hwanghae Ironworks. He possessedspecial skill in the mass production of steel by the open-hearth method, and has special technical skill in improving the quality of steel, and also in the production of blister steel. He introduced an extremely detailed and scientifically accurate method of making steel based on mathematical calculations to determine timing, quantities, ingredients, etc.

Pak Yong-hwa, chief of the steel production section, and Engineer Kim Hyom-chin, of the Hwanghae plants were workers who had only a sixth-grade, grammar-school education; but now they are highly skilled technicians.

Steel-Rolling Engineers Shevyakin and Rizkin succeeded in producing steel by a new technique, and also in using Korean coal satisfactorily as fuel in the heating furnace.

Engineer Sveritov, who was in charge of the open-hearth furnace shop in the Moscow Steel Plant, is now working toward improving the operations of the open-hearth furnace in the Hwanghae Ironworks to the most productive level within 4 months.

Engineer Rukiy is teaching technological methods that will increase the efficiency of blast furnaces in the Hwanghae Ironworks and elsewhere to 30 percent above the maximum production under the Japanese.

At the Songjin Steel Plant, Engineer Turobov was instrumental in producing copper pipes, copper wire, and silicon steel plates. Engineer Kalbartov, a specialist in the electric steel process, is devising a method which will make possible the mass production of high-grade special steel at low cost through an improvement of the method of operation of the electric induction furnace and the Heroult furnace.

Professor Savel'yev, a metallurgist and professor at P'yongyang Engineering College, who believed metallurgy to be of prime importance to technological development in Korea, established an institute for the teaching of metallurgical technology. He succeeded in unifying classroom, laboratory, and factory into an organic whole.

Professor Savel'yev exerted every effort to develop metallurgy in Korea because geographical conditions favor its development. North Korea produces little coking coal, but there is a great deal of electric power and anthracite coal. Moreover, although the quantity is small, North Korea produces a variety of such rare metals as manganese, chrome, vanadium, nickel, and wolfram. He therefore urged the industry's development in North Korea.

Many pages in Korean industrial history will be filled by the deeds of Engineer Kolbin and Professor Kalkrenko, both of the Soviet Industrial Advisory Department.

Engineer Kolbin, a steel-rolling specialist, gave tremendous assistance and exerted the greatest effort in the restoration of the Kangson Steel Plant, which had only its walls left standing. In addition, he established new rolling specifications for producing copper pipes and wire, and called upon much of his remarkable knowledge and experience in the conversion from large-size products, which are less in demand, to mass-production of such much-needed small products, such as thin steel plates.

Kalkrenko visited plants and factories all over North Korea. In Hwanghae Do, he directed the wire production at the Haeju Machine Manufacturing Plant. He also directed the operation of the rotating furnace at the Ch'ongjin Steel Plant. He was a manager of a steel plant in the Soviet Union and he not only possesses a highly specialized and superior skill, but also an incomparable ability in organization, management, and operation.

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